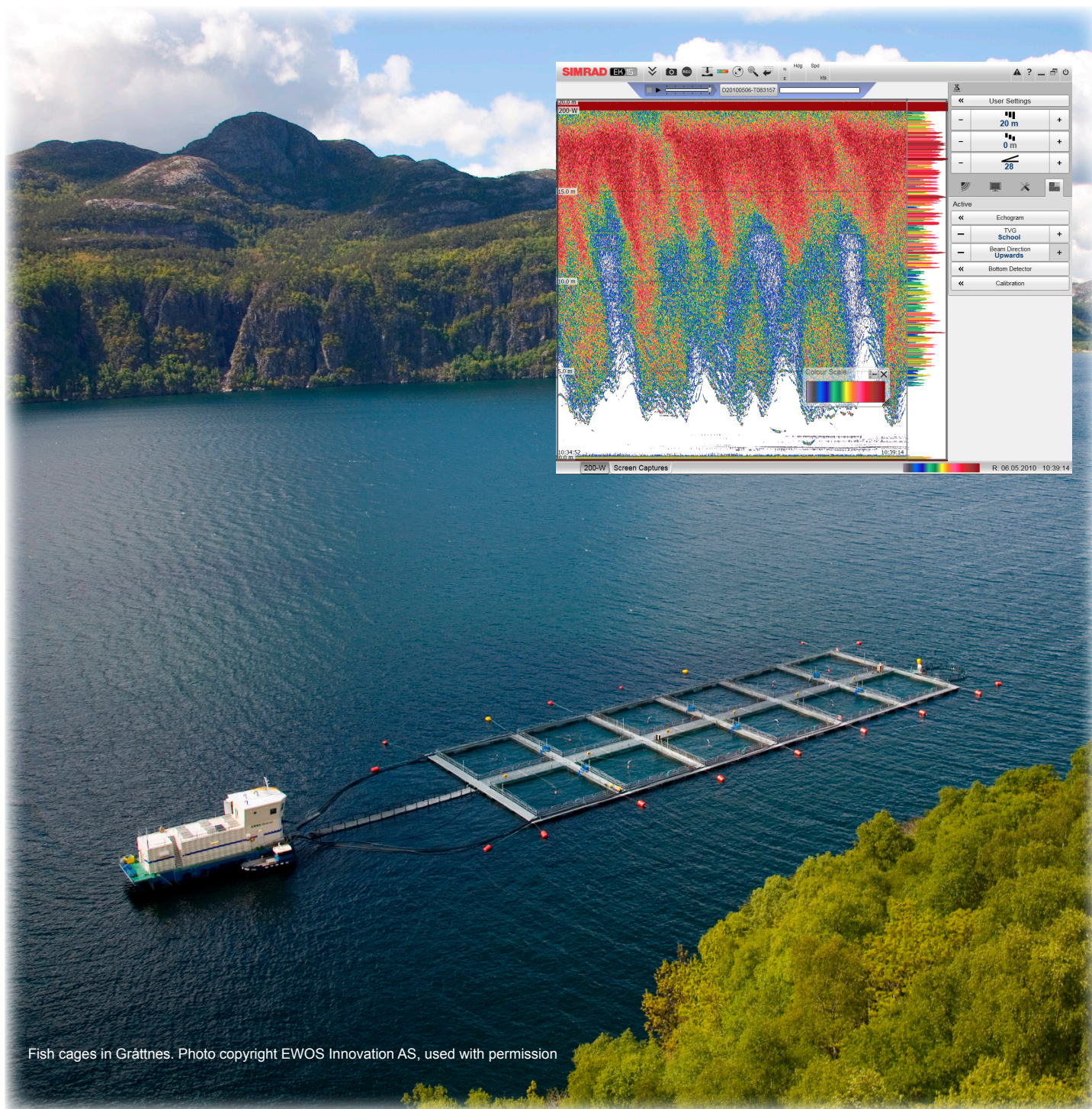


Installation manual

Simrad EK15

Multi purpose scientific echo sounder



Fish cages in Gråttnes. Photo copyright EWOS Innovation AS, used with permission



KONGSBERG

Simrad EK15

Installation manual

This manual provides you with the basic information required to install the Simrad EK15. For more detailed information about the practical use of the product, refer to the *Simrad EK15 Operator manual* or the *Simrad EK15 Reference manual*.

All user documentation is included on the software media provided with the Simrad EK15. The manuals can also be downloaded from <http://www.simrad.com/ek15>.

The Simrad EK15 transducer is not designed for hull mounting!

Revision status

Document no: 351719 / ISBN-13: 978-82-8066-147-0 / Revision: A		
Rev.A	24.02.2012	First version.

License information

When you have obtained the necessary licenses to operate the EK15, we strongly advice that you write down the hardware ID and the license codes on this page.		
Function	Purpose	Code
Hardware ID:	N/A	
License code		
License code		
License code		

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Disclaimer

Kongsberg Maritime AS endeavours to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

Warning

The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment and/or injury to personnel. All users must be familiar with the contents of the appropriate manuals before attempting to install, operate, maintain or in any other way work on the equipment. Kongsberg Maritime AS disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

Support information

If you require maintenance or repair, contact your local dealer. You can also contact us using the following address: simrad.support@simrad.com. If you need information about our other products, visit <http://www.simrad.com>. On this website you will also find a list of our dealers and distributors. See also *Support information* on page 13.

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About this manual

Purpose

The purpose of this manual is to provide the information and basic drawings required for installation of the Simrad EK15.

For more detailed information about the practical use of the product, refer to the *Simrad EK15 Operator manual* or the *Simrad EK15 Reference manual*.

Target audience

The manual is intended for technical personnel; qualified maintenance engineers and technicians. It is assumed that the personnel is conversant with the general principles of maritime electronic equipment, in particular sonar, echo sounder and catch monitoring systems. The personnel must also be familiar with computer hardware, signal processing, interface technology and traditional troubleshooting on electronic and mechanical products.

We assume that you are familiar with the Windows® 7 operating system, and conversant with network addressing and communication principles.

Installation instructions

The instructions provided in this manual must be followed carefully to ensure optimal performance. As a guide, installation procedures are presented in the order they are to be performed.

The equipment described in this manual includes the complete system with relevant cabinets, but not system units provided locally by the customer, installation shipyard or local representative. The manual also defines the equipment responsibility, and provides applicable instructions for unpacking and storage.

Note

The installation instructions given in this document must be adhered to. Failure to do so may render the guarantee void.

Kongsberg Maritime AS will accept no responsibility for any damage or injury to the system, vessel or personnel caused by equipment that has been incorrectly installed or maintained, or by drawings, instructions or procedures that have not been prepared by us.

Installation drawings

Detailed vessel specific mechanical drawings for the installation must be provided by the customer, or any shipyard contracted to perform the installation.

Kongsberg Maritime AS may, on special order, provide assistance to these drawings. Drawings must be approved by the appropriate vessel certification authority prior to installation of the system.

Applicable outline dimension and productions drawings are provided in the *Drawing file* chapter. Drawings may also be downloaded in PDF and/or DWG formats from <http://www.simrad.com>.

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Simrad EK15

Study this chapter to familiarize yourself with the Simrad EK15.

Topics

- *System description* on page 8
- *System diagram* on page 9
- *System units* on page 10
- *Scope of supply* on page 12
- *Network security* on page 12
- *Support information* on page 13

System description

The Simrad EK15 is designed for a variety of applications, and for both mobile surveys and fixed locations.

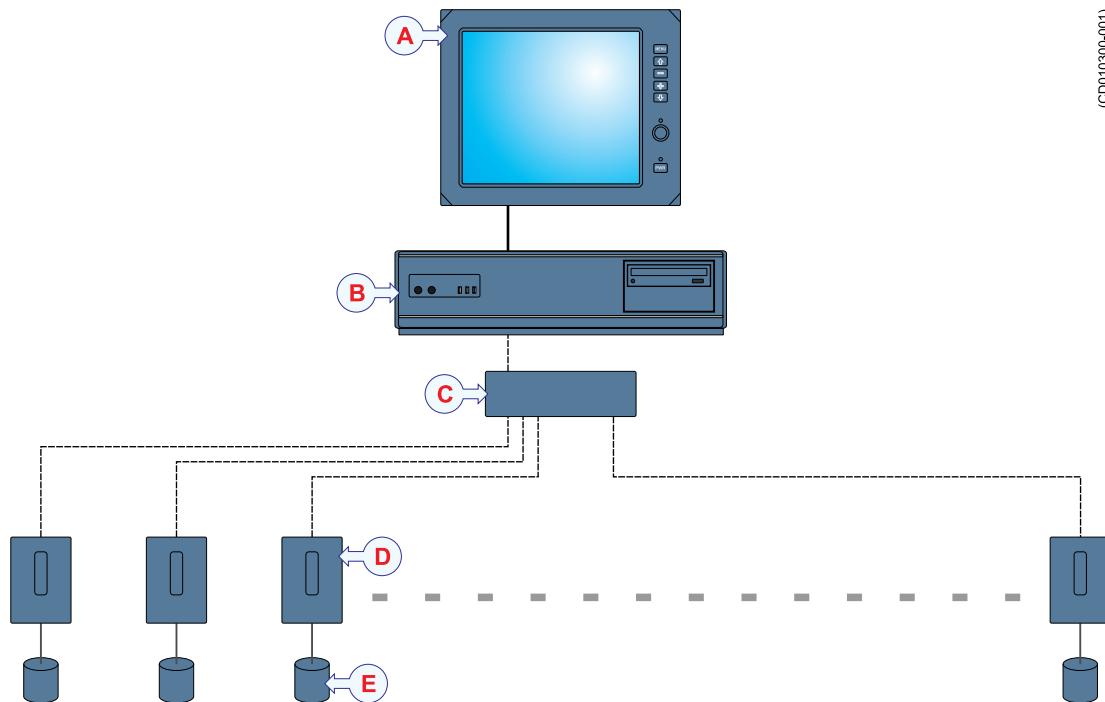
You can put it to use in a wide variety of environments: lakes, fjords, harbours, shallow marine, rivers, and even in aquaculture fish cages. The unique functionality offered using numerous transceivers, raw data logging and interfaces to secondary systems allow you to use the EK15 for fish stock assessment, studies of fish behavior and fish-plankton interactions, habitat mapping and ecosystem monitoring.

The Simrad EK15 is based on a small and ruggedized single beam Transceiver Unit and a dedicated transducer. The operational frequency is 200 kHz, which offers a very high resolution and high accuracy. You can use the Simrad EK15 with up to 15 Transceiver Units. These will operate in parallel with either simultaneous or sequential pinging. Using multiple transceivers you can monitor large areas with only a single echo sounder system.

System diagram

A typical EK15 system diagram with four transceivers is provided. Interface capabilities, power supplies and power cables are not shown.

Figure 1 Typical system diagram with a number of transceivers



- A** Display Unit
- B** Processor Unit (personal computer)
- C** Ethernet switch
- D** Transceiver Unit
- E** Transducer

To control the EK15 operation you can use a standard commercial computer, even a laptop. The EK15 application supports Windows® 7 operating system. On a larger system with multiple transceivers we recommend using a large display in order to view all echograms simultaneously.

You can connect up to 15 transceivers to the computer by means of a commercial Ethernet switch. If you only need one transceiver, the switch is not required. Each transceiver is provided with a dedicated power supply for AC operation. The only communication between the transceivers and the Ethernet switch (or computer) is the Ethernet cable. Due to the amount of information, only high quality Ethernet cables can be used. The cables may be easily replaced by commercial wireless systems.

System units

The Simrad EK15 comprises the following units.

Topics

- *Colour display* on page 10
- *Computer* on page 10
- *Transceiver Unit* on page 11
- *EK15 Transducer* on page 11
- *Ethernet switch* on page 11

Colour display

Any commercial colour display can be used with the Simrad EK15 system. The chosen display must be designed for maritime use, and it must meet the minimum performance specifications.

If you use a large number of transceiver, you will find it useful to use a large display with high resolution. The EK15 software supports all display sizes. The fidelity of your echogram presentation depends on the quality of your graphic adapter and display.

Note that the colour display is not a standard part of the EK15 delivery.

Related topics

- *Minimum display requirements* on page 37

Computer

The Simrad EK15 system is designed to be controlled by a commercial maritime computer. This computer must be based on the Microsoft Windows® 7 operating system. It must be designed for rugged use, and must be able to withstand the vibrations and movements of a vessel.

Note that the computer is not a standard part of the EK15 delivery. Simrad may provide a suitable maritime computer. Consult your dealer for more information.

Related topics

- *Minimum computer requirements* on page 36

Transceiver Unit

The EK15 Transceiver Unit comprises a small rugged box providing all necessary transmitter and receiver electronics. The receiver is designed for low noise, and it can handle input signals spanning a very large instantaneous dynamic amplitude range. All targets are correctly measured and displayed.

A high quality Ethernet cable connects the EK15 Transceiver Unit to the computer. The distance between the computer and the transceiver can be extended up to maximum 70 meters. If a longer cable is required, cut it in half, and insert an Ethernet switch half way to provide buffer amplification.

If more than one transceiver is used, a high speed Ethernet switch is required to connect the transceivers to the Processor Unit.

The EK15 Transceiver Unit requires an external power supply offering 12 Vdc. A suitable power supply is provided with the delivery.



EK15 Transducer

The Simrad EK15 is provided with a suitable single beam transducer. A 20 m cable is connected to the transducer, and the cable is terminated in a plug that fits the socket on the transceiver.

The Simrad EK15 transducer is not designed for hull mounting!

Ethernet switch

If you use more than one transceiver, you will need an Ethernet switch. Most commercial types can be used.

Note that the Ethernet switch is not a standard part of the EK15 delivery.



Scope of supply

Please observe the standard and optional parts provided with the Simrad EK15 delivery.

Standard parts	
Part number	Part/unit name and description
351603	EK15 Echo sounder module
"In the box"	
Part number	Part/unit name and description
351601	EK15 Transceiver Unit
359845	Power supply (230 Vac)
362657	Ethernet cable, 2 m
352209	Transducer with cable
351588	EK15 Quick start guide, English
367879	EK15 Guía rápida de inicio, Spanish
369069	USB memory device (holds computer software and all documentation)
Optional parts	
Part number	Part/unit name and description
-	Computer
-	Display
-	Ethernet switch
-	Additional Ethernet cables

Network security

Equipment manufactured by Kongsberg Maritime are frequently connected to the ship's local area network. Connecting any personal computer to a network will always expose the data on that computer to all other computers connected to the network. Several threats may immediately occur:

- Remote computers can read the data.
- Remote computers can change the data.
- Remote computers can change the behaviour of the computer, for example by installing unwanted software.

Usually, two parameters are used to define the threat level:

- The likelihood that any remote connection will do any of the above.
- The damage done if a remote connection succeeds doing this.

Because Kongsberg Maritime has no information regarding the complete system installation on any vessel, we can not estimate the threat level and the need for network security. For this reason, we can not accept responsibility for network security. Systems

provided by Kongsberg Maritime are regarded as stand-alone systems, even though they may be connected to a network for sensor interfaces and/or data distribution. For this reason, no safety applications are installed on any computers to protect these against viruses, malware or unintentional access by external users.

Securing the EK15 itself has no meaning unless there is a policy in place that secures all computers in the network, including physical access by trained and trusted users. This must always be a task for the end user to implement. The EK15 system has been verified to run under rather strict security setup, so it should be possible to implement a good security regime.

If you wish to connect the EK15 to the ship's network, you must implement the same security mechanisms on the EK15 computer(s) as for the rest of the network. In the tentative standard from Det Norske Veritas (DNV) - *Integrated Software Dependent System (DNV-OS-D203)* – this is described as a task for the network responsible person in charge of the overall behaviour of the network system. Some key elements here must be:

- The same anti-virus protection on all computers, including routines for updating this protection.
- The same settings for the firewall on all computers.
- Controlled physical access to computers on the network.
- Trusted operators.
- Log-in access mechanisms
- Same policy for attaching peripheral equipment to the computers (USB devices, hard drives etc)
- Installation of programs on any computer in the network, verification that each program is authentic.
- Definition of which programs are allowed to run on each computer.
- Logging mechanism of computer activity, and inspection of these logs.

How to define and implement these rules depends on each end user's network system configuration, which again must be a result of the policies and threat levels the end user has defined for the complete installation. For some products the network consists of only processor units or work stations, transceivers and a few sensors. On other vessels, larger computer systems can be installed to include numerous products and data systems. As the DNV-OS-D203 suggests, there must be one responsible person for the security of a system, large or small.

Support information

If you need technical support for your Simrad EK15 you must contact your local dealer, or one of our support departments. A list of all our dealers is provided on <http://www.simrad.com>.

Norway (Main office)

- **Company name:** Kongsberg Maritime AS / Simrad
- **Address:** Strandpromenaden 50, 3190 Horten, Norway
- **Telephone:** +47 33 03 40 00
- **Telefax:** +47 33 04 29 87
- **E-mail address:** simrad.support@simrad.com
- **Website:** <http://www.simrad.no>

Spain

- **Company name:** Simrad Spain
- **Address:** Poligono Partida Torres 38, 03570 Villajoyosa, Spain
- **Telephone:** +34 966 810 149
- **Telefax:** +34 966 852 304
- **E-mail address:** simrad.spain@simrad.com
- **Website:** <http://www.simrad.es>

USA

- **Company name:** Kongsberg Underwater Technology Inc / Simrad Fisheries
- **Address:** 19210 33rd Ave W, Lynnwood, WA 98036, USA
- **Telephone:** +1 425 712 1136
- **Telefax:** +1 425 712 1193
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- **Website:** <http://www.simrad.com>

Malaysia

- **Company name:** Kongsberg Maritime Malaysia Sdn. Bhd
- **Address:** Unit 27-5 Signature Offices, The Boulevard, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia
- **Telephone:** +65 6411 7488
- **Telefax:** +60 3 2201 3359
- **E-mail address:** simrad.asia@simrad.com
- **Website:** <http://www.simrad.com>

Installation

These are the specific procedures required to get you started with the Simrad EK15. Normally, you will only need to do these procedures once.

We recommend that you allow your dealer – with the assistance from a shipyard – to do the physical installation, install the software, obtain a valid license, and get you started.

Topics

- *Installation of the system units* on page 16
- *Installation of the EK15 software* on page 16
- *Obtaining the software license* on page 17
- *Setting up the EK15 transceiver(s) for the first time* on page 18
- *Installing a frequency channel* on page 21
- *Changing the IP addresses when more than one transceiver is used* on page 22

Installation of the system units

This procedure explains the basic principles of EK15 installation. It does not provide any details related to physical installation of the various units, location and installation of the transducer(s), and the various interface parameters.

All documentation for the Simrad EK15 is located on the media device provided with the delivery. The documents can also be downloaded from <http://www.simrad.com>.

WARNING

The Simrad EK15 transducer is not designed for hull mounting!

Procedure

- 1 Install the various hardware units (transceiver(s), computer(s) and transducer(s).
- 2 Connect all necessary cables between the hardware units.
 - a Connect the transducer(s) to the transceiver(s).
 - b Connect power to the transceiver(s).
 - c Connect the Ethernet cable from each transceiver to the Ethernet switch, and one Ethernet cable from the switch to the computer.
 - d Connect the necessary cables to the display; power and video.
- 3 Do a close visual inspection of the installation. Check each cable and connection to ensure that all wiring is correct.
- 4 Power up the EK15, and proceed with the next procedure; software installation.

Related topics

- *Installation of the EK15 software* on page 16
- *Cable layout and interconnections* on page 24
- *Drawing file* on page 38

Installation of the EK15 software

Use this procedure when you wish to install the EK15 software on a computer.

Note

Note that minimum hardware and software requirements must be met by the computer.

Procedure

- 1 Power up the computer.
- 2 Insert the EK15 software media.

If the EK15 software is provided on a CD or DVD, and your computer is not fitted with a suitable drive, copy the files from the CD/DVD to a USB memory stick.
- 3 Use a file manager application on the computer to access the software.
- 4 Double-click on the **Setup.exe** file to start the installation.

- 5 Allow the installation program to run. Follow the instructions provided.

Note

In the last dialog you are permitted to remove old settings. If you click to do this, the installation wizard will delete all settings related to the physical installation. These include all interface parameters, and all transceiver settings. Only software licenses are kept.

- 6 Once the installation has been completed, double-click the program icon on the desktop to start the application.
- 7 If you use **Windows 7** operating system:
 - a Observe that **Windows 7 Firewall** will open a dialog requesting information about the network.
Select *Public*, and click **Allow access**.
 - b The operating system may also open other dialogs to verify that the EK15 software can run on the computer. You must permit this.
- 8 Observe the relevant start-up procedure.

Related topics

- *Setting up the EK15 transceiver(s) for the first time* on page 18

Obtaining the software license

The EK15 requires a valid license to operate. This procedure explains how to obtain a license, and how to install it on your EK15 computer.

Without a license you will not be able to communicate with the EK15 Transceiver Unit(s).

Note

If you replace your computer, or if you replace major components inside your computer, you will need a new license code.

We strongly advice you to record the license code for safe keeping. You may for example write it down in the beginning of this manual.

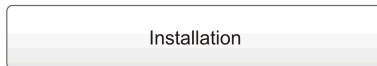
- 1 Double-click the EK15 icon on the desktop to start the application.
- 2 Observe the **Main** menu. It is normally located on the right hand side of the EK15 presentation.

- 3 Click the **Setup** icon.

This icon is located under the **Main** menu. It is used to open the **Setup** menu.



- 4 Click **Installation** to open the **Installation** sub-menu.



On the sub-menu, click **Software License** to open the **Software License** dialog.



The purpose of the **Software License** dialog is to allow you to enter a license code (text string) to unlock the EK15 functionality. In order to obtain the license code(s) required, contact your dealer.

- 5 Write down the **Hardware ID** provided by the **Software License** dialog.
- 6 Contact your dealer to order the software license.
Your dealer will need the following information from you to place the order:
 - Vessel name and call sign
 - Vessel type (trawler, purse seiner, etc.)
 - Vessel owner's name, address and contact information
 - Serial number on all transceivers
 - Hardware ID
- 7 When the software license is returned to you, start the EK15, open the **Software License** dialog, and click **Enter Licence String**.
- 8 Write down the code, and click **Ok**.
- 9 Click **OK** to save the current settings and close the dialog.

Setting up the EK15 transceiver(s) for the first time

This procedure explains how to set up your computer to communicate with the transceiver. You only need to do this once.

Important

Your computer may be provided with two Ethernet boards to interface with a local area network (LAN). You must then use one Ethernet board to communicate with the EK15 transceiver(s), and one to communicate with the LAN. These two boards can and must be set up separately. The Ethernet board used to communicate with the transceivers(s) must be set up with manual IP addresses. The board used to communicate with the LAN must be set up to obtain an IP address automatically (unless otherwise decided by your network administrator.)

Procedure

- 1 On the computer, define the network adapter settings.

Windows® 7

- a Click **Start** → **Control Panel** → **Network Connections**.
 - b Click **Change adapter settings** on the left menu.
 - c Click once on the network adapter to select it, and click **Properties** on the short-cut menu.
 - d On the list of connections, click **Internet Protocol 4 (TCP/IPv4)**, and then **Properties**.
 - e Click **Use the following IP address**, and enter the IP address and network mask.
IP Address: 157.237.14.60
Subnet mask: 255.255.255.0
 - f Click **OK** to save the settings.
 - g Exit all dialogs.
- 2 On the computer, start the EK15 program.
 - 3 Set up the transceiver(s) and transducer(s).

This procedure explains how to install a frequency channel.

Important

You must have a valid software license on your EK15 computer to set up a frequency channel!

Each EK15 transceiver with its transducer and (single) frequency is referred to as a frequency channel.

The upper part of the **Transceiver Installation** dialog displays a list of frequency channels which either are, or have been, installed on the EK15. For each channel on the list, a **Status** label is provided.

The following status values are available in the **Transceiver Installation** dialog.

- **Busy**: The frequency channel is already in use, probably by another echo sounder on the same network. You can not connect to this channel.
- **Installed**: This frequency channel is connected to your EK15 system.
- **Lost**: This frequency channel can not be used.
- **Available**: This frequency channel is vacant and ready for use.

Procedure

- a** Click the **Setup** icon.

This icon is located under the **Main** menu. It is used to open the **Setup** menu.



- b** Click the **Installation** button to open the **Installation** menu.



On the menu, click **Transceiver Installation** to open the **Transceiver Installation** dialog.



The purpose of the **Transceiver Installation** dialog is to set up the necessary parameters to connect the EK15 computer to the transceiver(s) and the transducer(s).

- c** In the **Transceiver Installation** dialog, click **Browse**.

The EK15 will automatically search the network for transceivers.

- d** Observe that all the frequency channels are listed in the dialog.

- e** Select a frequency channel that is available, and choose the correct transducer in the spin box.

Note

This is a critical task. You must ensure that the correct transducer is selected. If you connect the transceiver to a transducer that can not handle the power rating, it may be damaged beyond repair.

On the EK15, always choose transducer **ES10**.

- f** Observe that the status for the relevant frequency channels changes to *Installed*.

- g** Click **OK** to save the current settings and close the dialog.

4 Start normal operation.

This procedure explains how to set up the EK15 for normal operation.

- a** Observe the **Main** menu. It is normally located on the right hand side of the EK15 presentation.

- b** Click the **Operation** icon.

This icon is located under the **Main** menu. It is used to open the **Operation** menu.



- c** Click the **Operation** button, and select *Normal*.

Installing a frequency channel

This procedure explains how to install a frequency channel.

Important

You must have a valid software license on your EK15 computer to set up a frequency channel!

Each EK15 transceiver with its transducer and (single) frequency is referred to as a frequency channel.

The upper part of the **Transceiver Installation** dialog displays a list of frequency channels which either are, or have been, installed on the EK15. For each channel on the list, a **Status** label is provided.

The following status values are available in the **Transceiver Installation** dialog.

- **Busy**: The frequency channel is already in use, probably by another echo sounder on the same network. You can not connect to this channel.
- **Installed**: This frequency channel is connected to your EK15 system.
- **Lost**: This frequency channel can not be used.
- **Available**: This frequency channel is vacant and ready for use.

Procedure

- 1 Click the **Setup** icon.

This icon is located under the **Main** menu. It is used to open the **Setup** menu.



- 2 Click the **Installation** button to open the **Installation** menu.



On the menu, click **Transceiver Installation** to open the **Transceiver Installation** dialog.



The purpose of the **Transceiver Installation** dialog is to set up the necessary parameters to connect the EK15 computer to the transceiver(s) and the transducer(s).

- 3 In the **Transceiver Installation** dialog, click **Browse**.

The EK15 will automatically search the network for transceivers.

- 4 Observe that all the frequency channels are listed in the dialog.

- 5 Select a frequency channel that is available, and choose the correct transducer in the spin box.

Note

This is a critical task. You must ensure that the correct transducer is selected. If you connect the transceiver to a transducer that can not handle the power rating, it may be damaged beyond repair.

On the EK15, always choose transducer **ES10**.

- 6 Observe that the status for the relevant frequency channels changes to *Installed*.
- 7 Click **OK** to save the current settings and close the dialog.

Changing the IP addresses when more than one transceiver is used

This procedure explains how to modify this IP address.

The transceivers are provided by Simrad readily set up with a fixed Ethernet address and an IP address. If your EK15 uses two or more transceivers, these will by default have different Ethernet addresses, but identical IP addresses. In order for your system to work, all transceivers must have unique IP addresses.

If you have bought complete EK15 system that includes a computer and the required number of transceivers, this configuration was done at the factory. However, if you have purchased your own computer, and adds additional transceivers to an existing system, you must do this yourself, or leave it to your dealer.

- 1 Click the **Setup** icon.

This icon is located under the **Main** menu. It is used to open the **Setup** menu.



- 2 Click the **Installation** button to open the **Installation** menu.



On the menu, click **Transceiver Installation** to open the **Transceiver Installation** dialog.



The purpose of the **Transceiver Installation** dialog is to set up the necessary parameters to connect the EK15 computer to the transceiver(s) and the transducer(s).

- 3 Observe that the current frequency channels are listed in the dialog.
- 4 Click once on the frequency channel you wish to modify.
- 5 Observe that the relevant transceiver parameters are shown in the **Transceiver Information** field
- 6 Set the transducer(s) to *None*, and click **Apply**.

- 7 Click **Change IP Address** to open the **IP Address** dialog.

Note

*If you have two Ethernet cables connected to your computer, you may need to disconnect the Ethernet cable to the ship's network before the **Change IP Address** is available.*

- 8 Enter a new IP address

Tip

Change only the last digit in the IP address.

Tip

If you do not have a computer keyboard connected to your EK15 system, click the **Keyboard** button to open an on-screen keyboard.

- 9 Click **OK** to save the current settings and close the dialog.
- 10 In the **Transceiver Installation** dialog, observe that the IP address for the chosen transceiver has changed.
- 11 Install the transducers for the channel with the new IP address.

Note

Make sure that you choose the correct transducer(s)!

- 12 Click **OK** to save the current settings and close the dialog.

Cable layout and interconnections

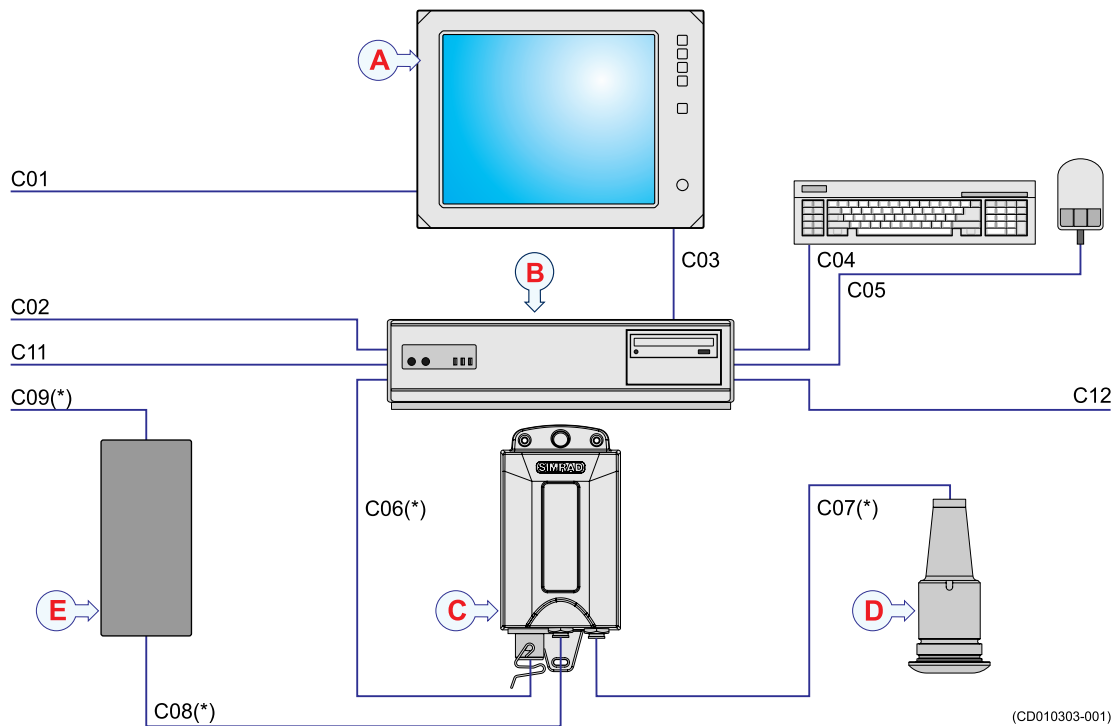
This chapter provides the cable plan and cable installation requirements for the Simrad EK15.

Topics

- *Cable plan* on page 25
- *List of cables* on page 26
- *Cable drawings* on page 28

Cable plan

Observe the cable plan for the Simrad EK15. Cables identified with an asterisk (*) are provided by Simrad.



A Colour display (not included in delivery)

B Computer (not included in delivery)

C Transceiver Unit

D Transducer

E Power supply

Important

If you wish to use more than one transceiver, you must use an Ethernet switch between the computer and the transceivers.

List of cables

Observe the list of cables for the Simrad EK15. The **Cx** numbers refer to the cable plan. References are made to the individual cable drawings specifying each cable with its connectors.

C1 AC mains to colour display

This cable is provided with the display. It is a standard commercial mains cable. The display end is normally terminated with an IEC C13 inline socket.

The other end is terminated in an AC connector suitable for the local conditions. If this is not the case, you must replace the AC connector. The typical cable length is between 1,5 and 2 meters. If this is too short you must use an extension cable (not recommended), mount a new power outlet within range, or make your own power cable.

→ *AC mains (IEC 60320)* on page 29

C2 AC mains to computer

This cable is provided with the computer. It is a standard commercial mains cable. The computer end is normally terminated with an IEC C13 inline socket.

The other end is terminated in an AC connector suitable for the local conditions. If this is not the case, you must replace the AC connector. The typical cable length is between 1,5 and 2 meters. If this is too short you must use an extension cable (not recommended), mount a new power outlet within range, or make your own power cable.

→ *AC mains (IEC 60320)* on page 29

C3 Display video cable

This video cable is normally provided with the display, and it is often physically attached to the rear side of the display. It is a standard commercial cable.

The most common video formats and connectors are SVGA and DVI. Some computers also support the HDMI output format.

Make sure that the computer's graphic adapter is fitted with a connector that matches the video cable provided with the display.

C4 Computer keyboard

This is a standard keyboard cable. It is usually fixed to the keyboard. The connection normally depends on the make and model of the computer. Most recent computers use a USB plug, older types use PS/2. Wireless keyboards are also available.

Note that the keyboard is an optional item. It is not a part of the EK15 delivery.

C5 Computer mouse

This is a standard computer mouse, or other pointing device, cable. It is physically attached to the mouse. The cable is normally terminated in a USB plug. Wireless pointing devices are also available.

C6 Ethernet cable from computer to Transceiver Unit

This is a high quality Ethernet cable.

→ *RJ45 Ethernet, straight* on page 30

Important

If you for any reason wish to use your own Ethernet cable, it is very important that a high quality cable is used. You must use CAT-5E quality or better. Cables with lower bandwidth capacity will reduce the EK15 performance.

C7 Transducer cable

This cable is provided with the transducer. The length is 25 meters, and it is terminated with a plug that fits the socket on the Transceiver Unit.

→ *Transceiver Unit connections* on page 32

C8 Power cable

This cable is provided with the power supply. It is terminated with a plug that fits the socket on the Transceiver Unit.

→ *Transceiver Unit connections* on page 32

C9 AC mains to power supply

This cable is provided with the power supply. It is a standard commercial mains cable. The power supply end is permanently fixed to the supply.

The other end is terminated in an AC connector suitable for the local conditions. If this is not the case, you must replace the AC connector. The typical cable length is between 1,5 and 2 meters. If this is too short you must use an extension cable (not recommended), mount a new power outlet within range, or make your own power cable.

→ *AC mains (IEC 60320)* on page 29

This cable is provided with the power supply. It is terminated with a standard mains plug.

C10 Not used

C11 Ethernet cable from computer to external network

If your computer is fitted with two Ethernet adapters, you can connect it to an external network.

This is a high quality Ethernet cable.

→ *RJ45 Ethernet, straight* on page 30

C12 Interface to peripheral devices

These interfaces include relevant sensors, as well as a printer.

Cable drawings

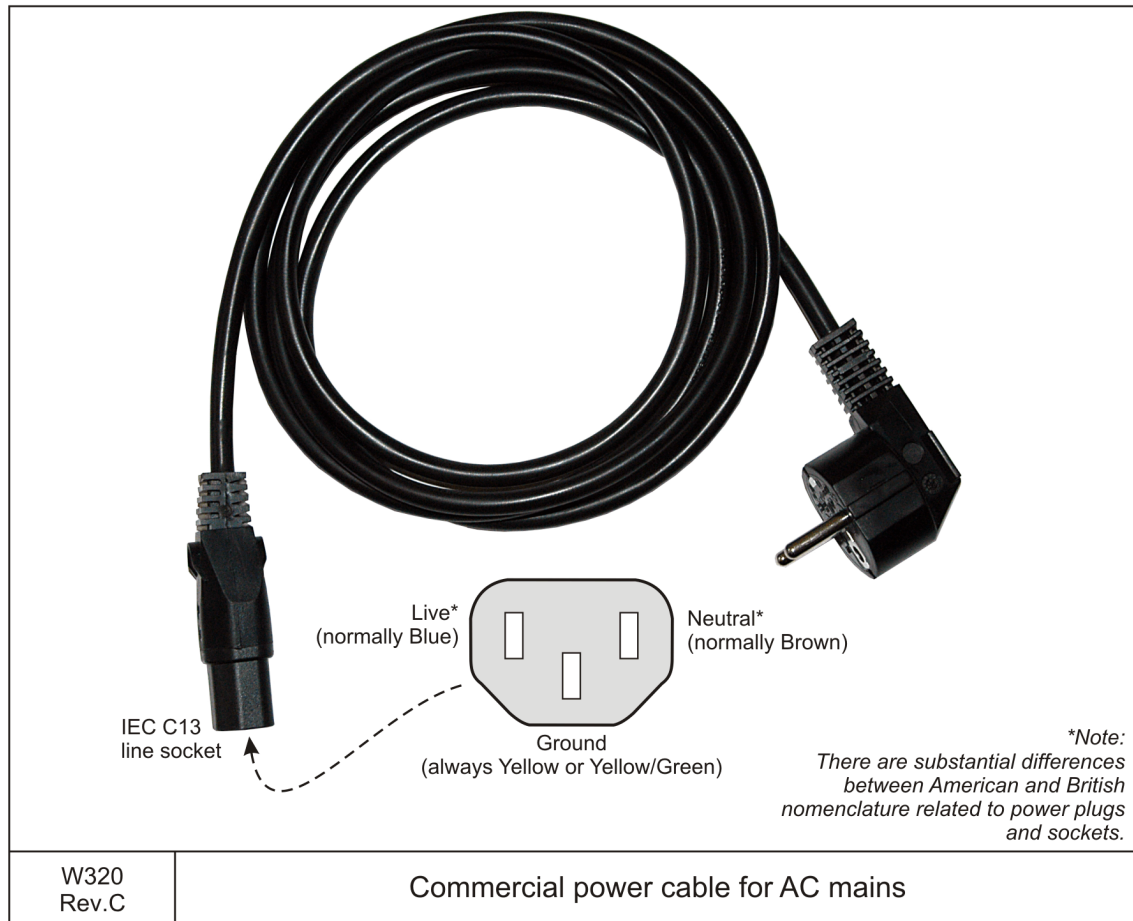
The drawings provided specify in detail each cable used by the Simrad EK15.

Topics

- *AC mains (IEC 60320)* on page 29
- *RJ45 Ethernet, straight* on page 30
- *Transceiver Unit connections* on page 32

AC mains (IEC 60320)

This is a commercial 230 Vac power cable for mains power. One end is fitted with an IEC plug, the other with a standard European mains plug. This is a standard cable type supplied in different lengths.



Cable specifications

- **Conductors:** 2 x 1.5 mm² + GND
- **Screen:** None
- **Voltage:** 750 V
- **Maximum diameter:** Set by the plugs

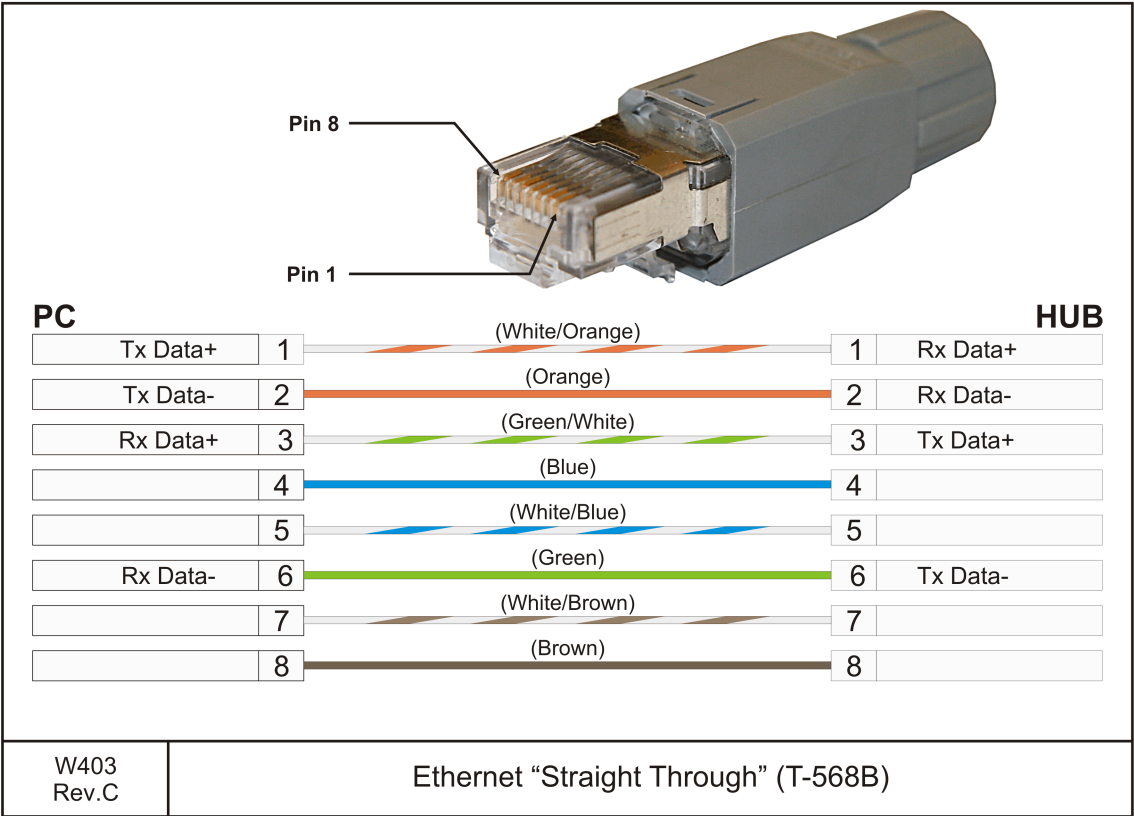
More information

- http://en.wikipedia.org/wiki/IEC_320

RJ45 Ethernet, straight

This cable is used to provide standard Ethernet connections. Note that various categories exists. Normally, **CAT-5E** and **CAT-6** cables are used in local area networks with bandwidth exceeding 100 Mbit. Ethernet cables are available commercially in different lengths, colours and categories.

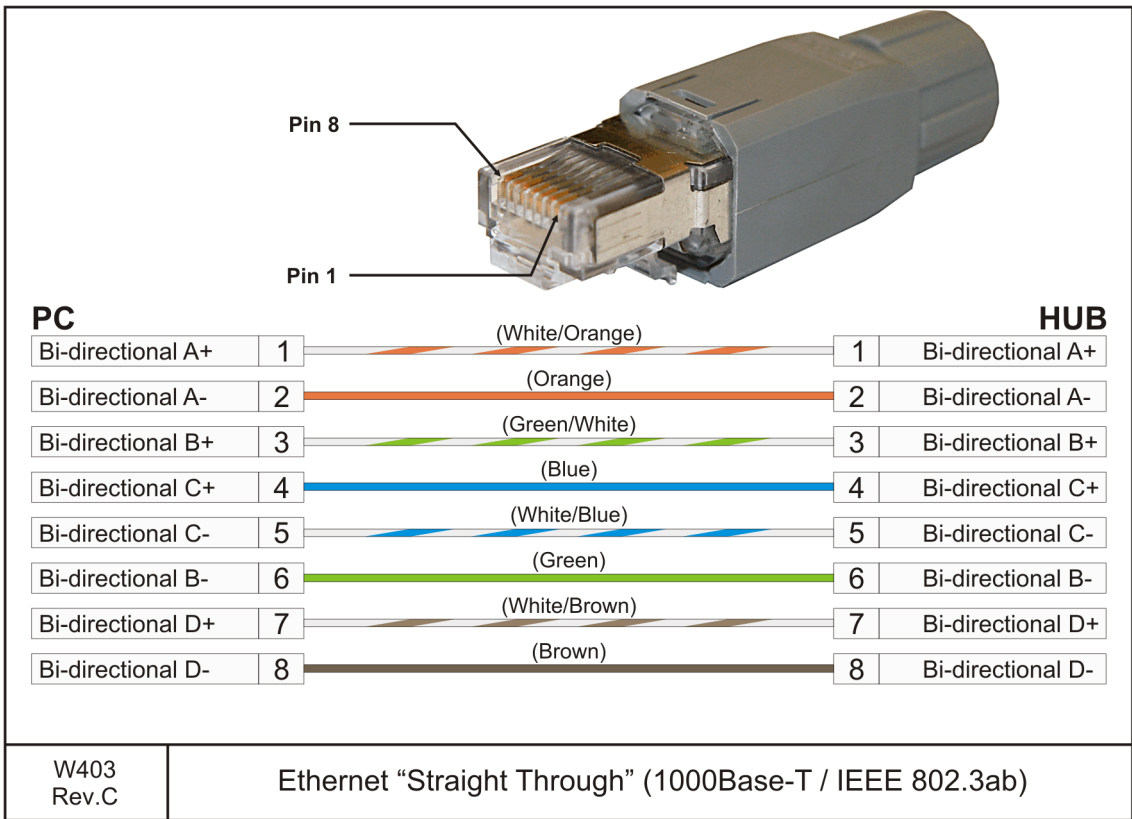
10Base-T Low-speed Ethernet connections



Cable specifications

- Not applicable. This is a commercial cable.

1000Base-T High-speed Ethernet connections (CAT5E and faster)



Cable specifications

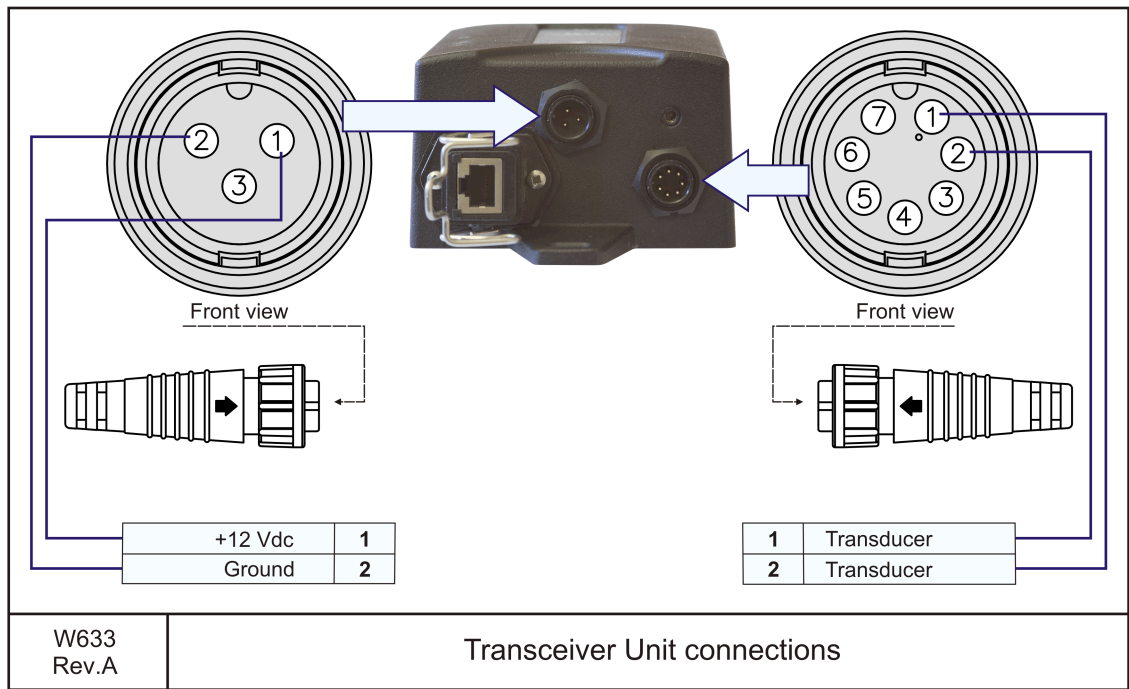
- Not applicable. This is a commercial cable.

More information

- <http://en.wikipedia.org/wiki/TIA/EIA-568-B>
- http://en.wikipedia.org/wiki/Category_5_cable

Transceiver Unit connections

These are the transducer and power cables that connect to the transceiver. Both cables are provided in the package with the EK15.



Technical specifications

This chapter provides the technical specifications and requirements related to the Simrad EK15.

In Simrad, we are continuously working to improve the quality and performance of our products. Technical specifications may therefore be changed without prior notice.

Topics

- *Performance specifications* on page 34
- *Weights and outline dimensions* on page 35
- *Power specifications* on page 35
- *Minimum computer requirements* on page 36
- *Minimum display requirements* on page 37

Performance specifications

This section provides the performance specifications for the Simrad EK15.

Operational frequency

- 200 kHz

Typical range

- 200 meters

Transmission

- Simultaneous or sequential
- Ping rate: Up to 40 Hz
- Pulse durations: 80 to 1240 μ s

Transceiver Unit

- Data rate: 1.6 Mbps
- Maximum number in use: 15
- Output power: 45 W
- IP rating: IP66

Calibration

- Built in single beam calibration

Data output formats

- Raw data (EK60 format)
- Processed data
- Raw data storage capacity only limited by disk size

Data subscriptions

- Ethernet datagram based system for remote subscription

Third party post-processing

- EchoView
- Sonar5

Transducer

- Type: Single beam
- Maximum installation depth: 600 meters
- Beamwidth: 26 degrees

Weights and outline dimensions

This section provides the technical specifications and requirements related to weight and outline dimensions.

For more detailed information about the dimensions, refer to chapter *Drawing file*

- *Drawing file* on page 38

Colour display

- The colour display is not a part of the Simrad EK15 scope of supply. Refer to the documentation provided by the manufacturer.

Computer

- The computer is not a part of the Simrad EK15 scope of supply. Refer to the documentation provided by the manufacturer.

Transceiver Unit

- Width: 10 cm
- Height: 15 cm
- Depth: 6 cm

Transducer

- Diameter: 40 mm
- Height: 55 mm
- Cable length: 25 mm
- Limitations: The transducer is not designed for hull mounting!

Power specifications

This section provides the technical specifications and requirements related to the AC and/or DC mains supply.

Colour display

- The colour display is not a part of the Simrad EK15 scope of supply. Refer to the documentation provided by the manufacturer.

Computer

- The computer is not a part of the Simrad EK15 scope of supply. Refer to the documentation provided by the manufacturer.

Transceiver Unit

- Supply voltage: 12 Vdc
- Power consumption: 1,2 W
- AC power supply: Included with delivery

Minimum computer requirements

Observe the minimum technical requirements for the Simrad EK15 Processor Unit computer.

Unless specifically ordered from Simrad, the EK15 is not provided with a colour display or computer. These items must be purchased locally. If more than one Transceiver Unit is used, a high speed Ethernet switch is also required.

It is important to make sure that the chosen computer model meets the technical system requirements. It must fulfill the various interface requirements made by the EK15 system, and you may need to add extra Ethernet and serial adapters. Make sure that the computer design and construction allow for marine use, easy access to parts and cables, and a safe installation. A laptop computer may be used as long as it meets the technical requirements.

The minimum requirements are:

- **Processor:** 2 GHz, Dual core
- **Memory capacity:** 2 Gb
- **Hard disk capacity:** Minimum 30 Gb free

If you wish to record raw data, you must either install a large hard disk, or relay on peripheral storage devices.

- **Graphic adapter**

The graphic adapter must support DirectX9.0c, and must be compatible with Direct3d and OpenGL.

A large number of commercial graphic adapters are available, and Simrad has not tested all of them. Even adapters that meet the minimum specifications may fail with the EK15 software. We welcome any feedback with comments or experiences with graphic adapters.

- **Interfaces**

The computer must offer minimum one Ethernet interface. Two are required if the computer shall also be connected to a local area network (LAN).

One or more serial line interfaces are also required. The number of serial lines depend on the interface requirements.

If you have connected a USB-to-serial adapter to the computer, do not remove it while the EK15 is running. Also, do not move the adapter to a different USB socket on the computer.

- **Operating system**

The EK15 software has been designed for 32-bit Windows® 7. For all new EK15 installations, we recommend that Windows® 7 is used.

Minimum display requirements

Unless specifically ordered from Simrad, the EK15 is not provided with a colour display. This item must be purchased locally. You can use one or two displays on your EK15 computer depending on personal and operational preferences.

It is important to make sure that the chosen display model meets the technical system requirements. Make sure that the display design and construction allow for marine use, easy access to cables, and a safe installation.

The minimum requirements are:

- **Resolution:** Minimum 1280 x 1024 pixels.
- **Interfaces:** Must match the video output formats provided by the computer.
- **Physical size:** Depends on personal and operational preferences. The EK15 software supports 9:16 displays.

Tip

If you use the EK15 with many transceivers, you may find it useful with a large high resolution display.

Drawing file

This chapter contains relevant drawings related to the installation and maintenance of the Simrad EK15.

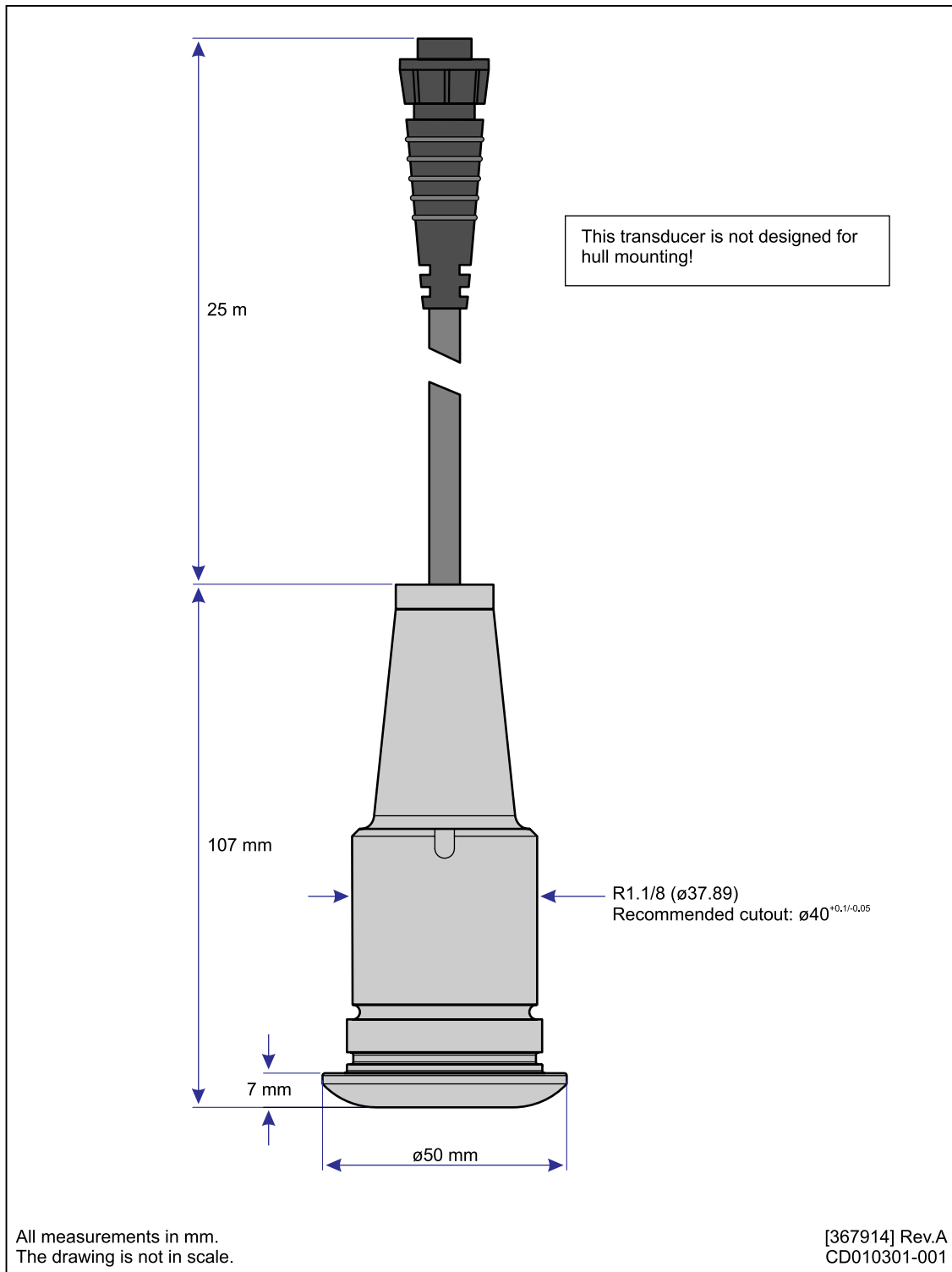
The mechanical drawings are for information and guidance only. They are not in scale. All dimensions are in mm unless otherwise is noted. The original installation drawings are available on PDF and/or AutoCad's DWG format.

Visit www.simrad.com to download.

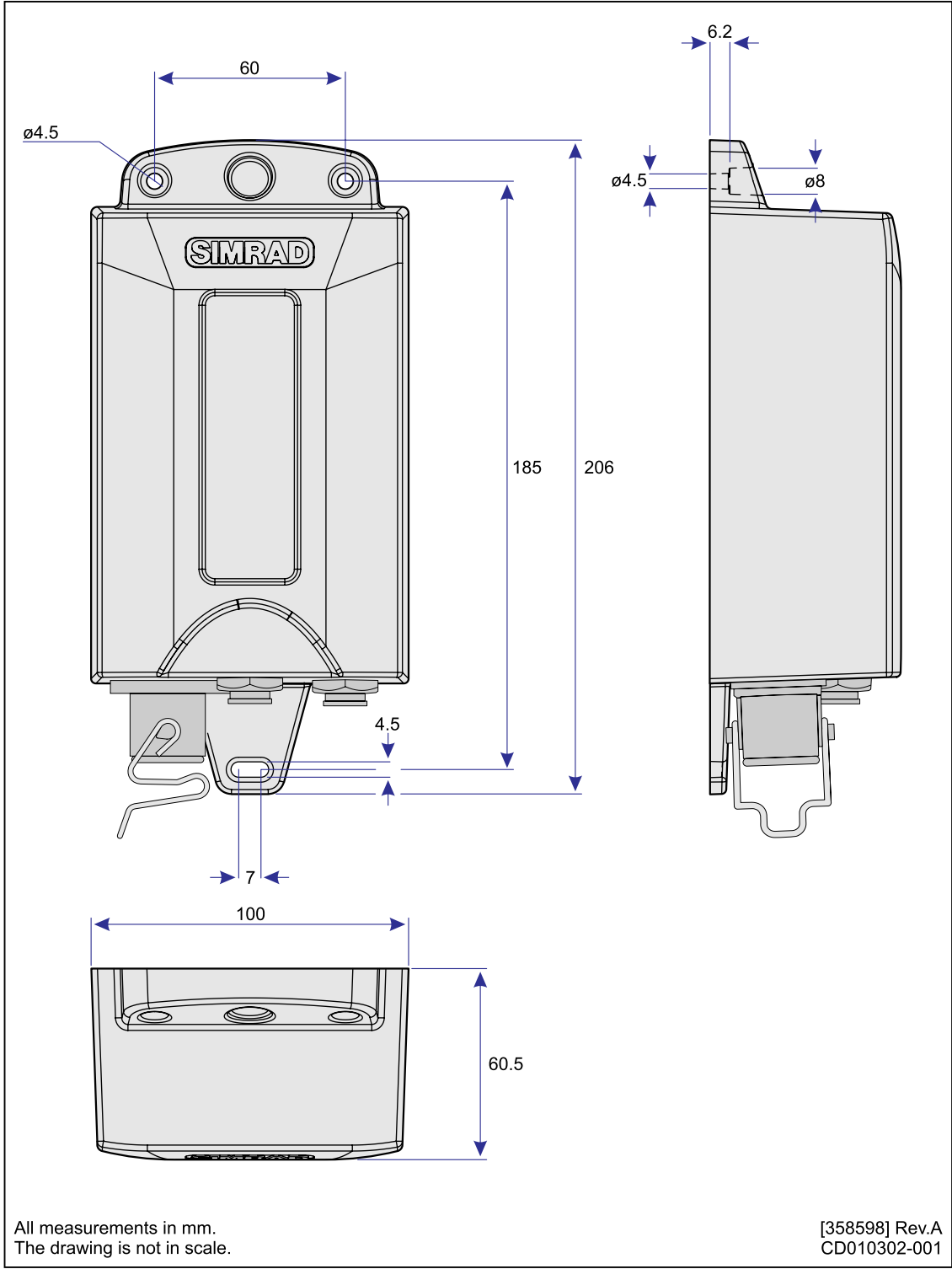
Topics

- *Transducer, outline dimensions* on page 39
- *Transceiver, outline dimensions* on page 40

Transducer, outline dimensions



Transceiver, outline dimensions



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ISBN-13: 978-82-8066-147-0

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